CLAIMS
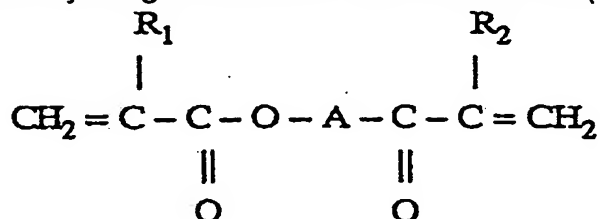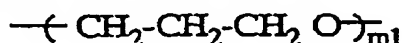
1. Composition of polymerisable monomers comprising :
- 40 to 95 parts by weight of one or more monomers (I) of formula :
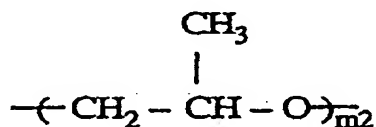
$$CH_2 = \overset{\overset{\displaystyle R_1}{\displaystyle |}}{C} - \underset{\underset{\displaystyle O}{\displaystyle \|}}{C} - O - A - \underset{\underset{\displaystyle O}{\displaystyle \|}}{C} - \overset{\overset{\displaystyle R_2}{\displaystyle |}}{C} = CH_2$$

in which

R_1 and R_2 represent H or CH_3,

A represents a divalent radical of formula

$$-(CH_2\text{-}CH_2\text{-}CH_2\ O)_{m1}$$

or

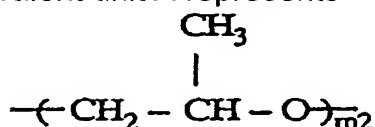$$-(CH_2 - \overset{\overset{\displaystyle CH_3}{\displaystyle |}}{CH} - O)_{m2}$$

m_1 and m_2 are each integers varying from 2 to 6, and

- 5 to 50 parts by weight of a monomer (II) comprising at least one urethane unit and at least two (meth)acrylate functions.

2. Composition according to claim 1 characterised in that, in the formula of the monomer (I), said divalent unit A represents

$$-(CH_2 - \overset{\overset{\displaystyle CH_3}{\displaystyle |}}{CH} - O)_{m2}$$

m_2 is as defined in claim 1.

3. Composition according to any of the preceding claims, characterised in that the monomer (II) is a urethane di(meth)acrylate oligomer.

4. Composition according to claim 3, characterised in that the urethane di(meth)acrylate oligomer is an aliphatic polyester.

5. Composition according to any of claims 1 to 4, characterised in that the monomer (II) has the formula

$$Q\left[W\text{-}O-\overset{\overset{\displaystyle O}{\|}}{C}-\overset{\overset{\displaystyle R}{|}}{C}=CH_2\right]_n$$
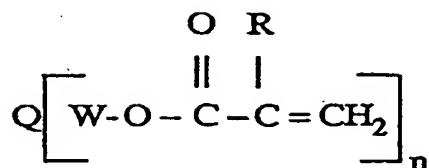
in which Q is a radical of valency n, with linear, branched or cyclic structure, containing at least two units of formula

$$-\overset{\|}{\underset{O}{C}}-NR'-$$
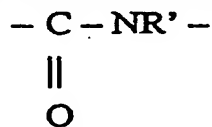
5   W is a divalent alkyl radical, with linear or branched structure, with from 1 to 5 carbon atoms, n varies from 2 to 4, R represents H or CH_3, and R' represents H or a valence bond.
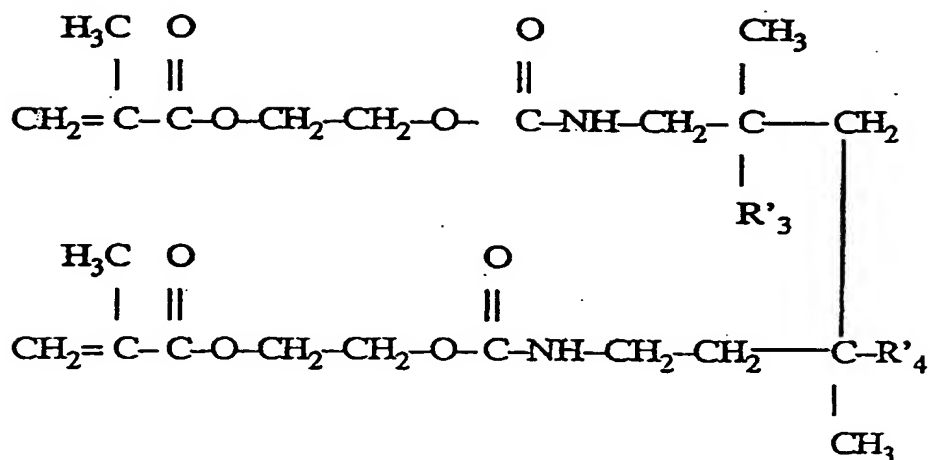
6. Composition according to claim 6, characterised in that W represents

10   the radical -CH_2CH_2-.

7. Composition according to claim 5 or 6, characterised in that, in the formula of the monomer (II), the radical Q is a divalent radical of formula :

$$-O-\overset{\overset{\displaystyle O}{\|}}{C}-NR'_1-X-NR'_2-\overset{\overset{\displaystyle O}{\|}}{C}-O-$$
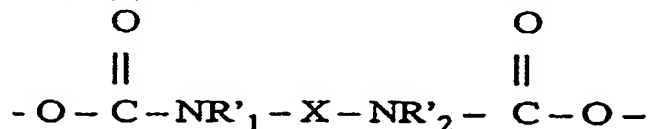
15   in which X represents a linear or branched divalent alkyl chain with from 1 to 15 carbon atoms, preferably from 8 to 12 carbon atoms and R'_1 and R'_2 independently represent H or CH_3.

8. Composition according to claim 7, characterised in that the monomer

20   (II) has the formula :

$$\underset{\substack{|\\CH_3}}{\overset{\substack{H_3C \quad O\\| \quad ||}}{CH_2=C-C-O-CH_2-CH_2-O-}} \quad \underset{\substack{|\\R'_3}}{\overset{\substack{O\\||}}{C-NH-CH_2-}}\underset{\substack{|\\R'_3}}{\overset{\substack{CH_3\\|}}{C}}\text{---}CH_2$$

$$\underset{\substack{|\\CH_3}}{\overset{\substack{H_3C \quad O\\| \quad ||}}{CH_2=C-C-O-CH_2-CH_2-O-}}\overset{\substack{O\\||}}{C-NH-CH_2-CH_2}\text{---}\underset{\substack{|\\CH_3}}{C-R'_4}$$
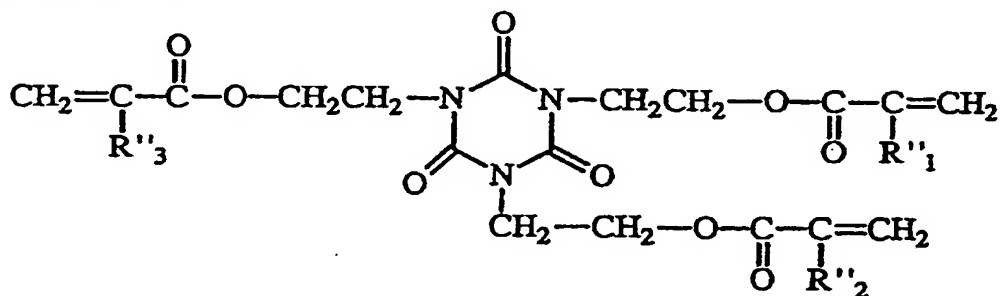
in which R'₃ and R'₄ independently represent H or CH₃.

9. Composition according to claim 5 or 6, characterised in that, in the
5   formula of the monomer (II), Q represents a trivalent radical of formula:
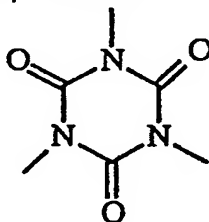
10. Composition according to claim 9, characterised in that the monomer
(II) has the formula

10

in which R"₁, R"₂ and R"₃ independently represent H or CH₃.

11. Composition according to any of the preceding claims, characterised
in that it additionally contains 0 to 30% by weight, compared to the total weight
15   of monomers (I) and (II), of one or more monomers (III), different from
monomers (I) and (II), and polymerisable by free radical mechanisms.

12. Composition according to claim 11, characterised in that it contains 0 to 10% by weight of monomers (III).

13. Composition according to claim 11 or 12, characterised in that the monomers (III) are selected from the alkyl (meth)acrylates, the cycloalkyl (meth)acrylates, phenyl (meth)acrylate, benzyl (meth)acrylate, the naphthyl (meth)acrylates, the phenoxyalkyl (meth)acrylates, the alkylene glycol di(meth)acrylates, the poly(alkylene) glycol di(meth)acrylates different from the monomers (I), neopentyl glycol di(meth)acrylate, compounds of bisphenol-A di(meth)acrylate and their mixtures.

14. Composition according to any of claims 11 to 13, characterised in that the monomers (III) correspond to formula (I) for which m_1 or m_2 is an integer greater than 6, and in that the quantity of these monomers (III) is such that the mean value of m_1 and/or m_2 corresponding to the total of the monomers corresponding to the formula (I) is less than 5.

15. Composition according to any of claims 1 to 14, characterised in that it contains from 10 to 40 parts by weight of monomer (II).

16. Composition according to any of claims 11 or 12, characterised in that the monomer (III) is a monomer with high Abbe number which contains at least one non-aromatic cyclic or polycyclic hydrocarbon radical.

17. Composition according to claim 16, characterised in that the monomer (III) is selected from at least one of the monomers of the following formula :
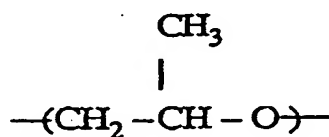

(A1)

(B1)

(C1)

(D1)
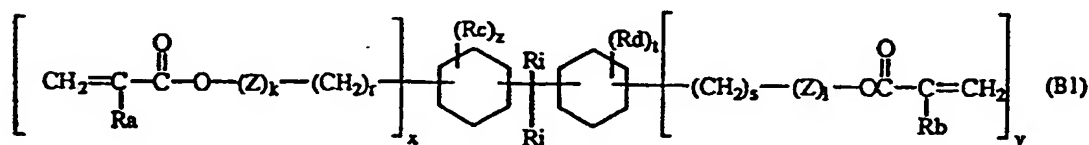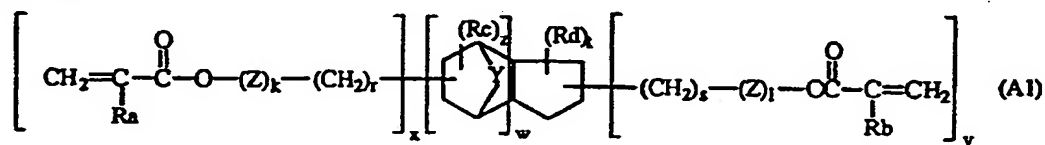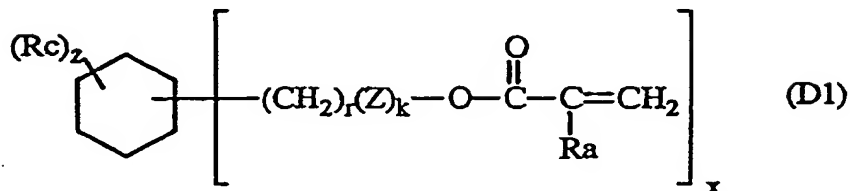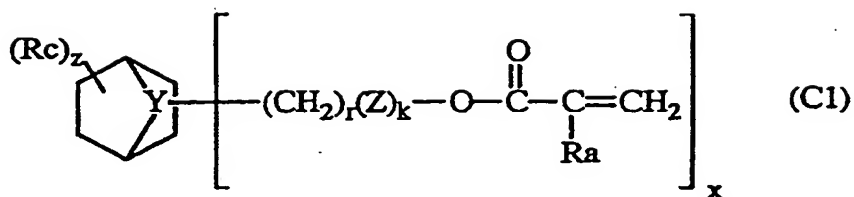
In these formulas :

Y is a divalent radical selected from $-O-$, $-CH_2-$, $-C(CH_3)_2-$, $-C(H)(CH_3)-$

Z is a divalent radical selected from $-(CH_2)_p-O-$, p being an integer from 1 to 4, and

$$-(CH_2-CH-O)-$$
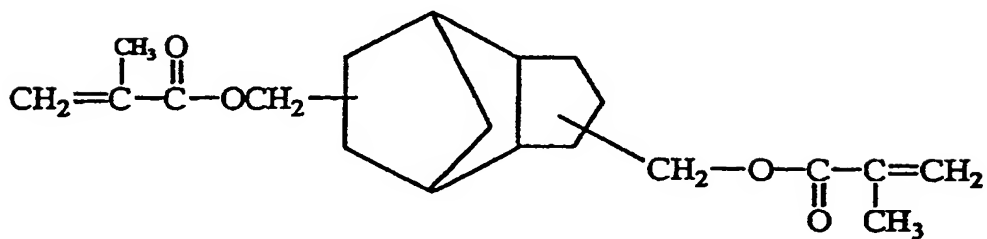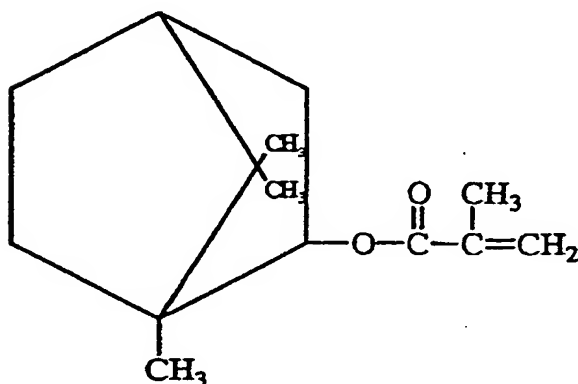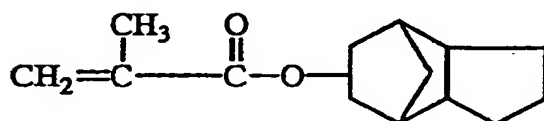$$\qquad\ \ |$$
$$\qquad CH_3$$

R_a, R_b represent H or CH_3

R_c, R_d independently represent a linear or branched alkyl radical with 1 to 6 carbon atoms

R_i, R_j independently represent a linear or branched alkyl radical with 1 to 10 carbon atoms, w is an integer from 1 to 3, x is an integer from 0 to 3, y is an integer from 0 to 3, on condition that $x + y \geq 1$, k is an integer from 0 to 6, l is an integer from 0 to 6, r is an integer from 0 to 6, s is an integer from 0 to 6, z is an integer from 0 to 3 and t is an integer from 0 to 3.

18. Composition according to claim 17, characterised in that the monomer (III) is selected from the monomers of formula :

$$CH_2{=}\overset{\overset{\displaystyle CH_3}{|}}{C}{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O{-}\langle\ \rangle{-}C(CH_3)_3$$

$$CH_2{=}\overset{\overset{\displaystyle CH_3}{|}}{C}{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O{-}$$

$$O{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}\overset{\overset{\displaystyle CH_3}{|}}{C}{=}CH_2$$

CH₃ ... CH₃

$$CH_2{=}\overset{\overset{\displaystyle CH_3}{|}}{C}{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}OCH_2{-}$$

$$CH_2{-}O{-}\underset{\underset{\displaystyle O}{\|}}{C}{-}\overset{\overset{\displaystyle }{|}}{\underset{\underset{\displaystyle CH_3}{}}{C}}{=}CH_2$$
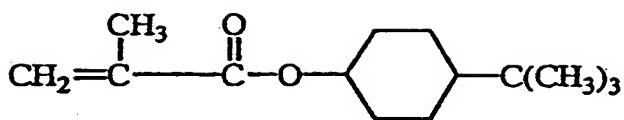
19. Composition according to any of the preceding claims, characterised in that the monomers (II) and (III) lead, by homopolymerisation, to a homopolymer with refractive index less than or equal to 1.54.

20. Composition according to any of claims 11 to 18, characterised in that the monomers (III) lead, by homopolymerisation, to a homopolymer with refractive index less than or equal to 1.54.

21. Composition according to any of the preceding claims, characterised in that it has a viscosity less than or equal to 0.3 Pa.s.

22. Transparent polymer substrate with a refractive index ranging from 1.48 to 1.52 characterised in that it is obtained by polymerisation of a composition according to any of the preceding claims.

5   23. Optical lens comprising a polymer substrate according to claim 22.

24. Optical lens according to claim 23, characterised in that the lens is an ophthalmic lens.

10   25. Optical lens according to claim 24, characterised in that the lens is a spectacle lens.